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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,515	06/24/2003	Kazuo Takemasa	AK-418XX	8865
207	7590	09/22/2005	EXAMINER	
WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109			LEUNG, RICHARD L	
			ART UNIT	PAPER NUMBER

3744

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/602,515

Applicant(s)

TAKEMASA, KAZUO

Examiner

Richard L. Leung

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9 August 2005 has been entered.

Specification

2. The disclosure is objected to because of the following informalities: the recitations of "as claimed in claim 1," (page 8, line 32); "as claimed in claim 2," (page 9, line 19); "as claimed in claim 3," (page 9, line 27); and "as claimed in claim 4," (page 9, line 34) should be removed from the written description of the invention since such statements do not necessarily reflect the status nor content of the claims. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 4824454 (Kondo et al.) in view of US 5195577 (Kameda et al.), US 4592205 (Brodbeck et al.), and US 5327729 (Yanai et al.). Kondo et al. disclose a system for cooling an object 19, comprising a preserving vessel 17 with a preservation chamber, which is

Art Unit: 3744

filled with liquid cryogen 18 such as liquid nitrogen (column 1, line 12). Referring particularly to FIG. 2 and column 2, said system further comprises a Stirling refrigerator 10 and a condensing chamber 13 outside said preserving vessel 17 wherein vaporized cryogen is re-liquefied. The gas phase part of the condensing chamber 13 is made to communicate with that of said preserving vessel 17 through a pipe 15, the liquid phase part of the condensing chamber 13 is made to communicate with that of said preserving vessel 17 through a pipe 16 connecting between the lower part of the condensing chamber 13 and the lower part of the preservation chamber of said preserving vessel 17 (see FIG. 2 and column 2, lines 38-43), and the cooling part 21 and 22 of said refrigerator is arranged inside the condensing chamber 13. It is clear from FIG. 2 that the liquid phase part of said condensing chamber 13 is set to a position higher than that of the liquid phase part of said preserving vessel 17 since the entire condensing chamber 13 appears to be positioned higher than said preserving vessel 17. Kondo et al. fail to disclose that said pipe 16, through which the liquid phase part of the condensing chamber 13 is made to communicate with that of said preserving vessel 17, is entirely disposed below an upper surface of the liquid phase part of said preserving vessel 17. Kameda et al. teach a related system comprising a preserving vessel 3 that contains a liquid refrigerant 23 for cooling an item 1 situated therein, a condensing chamber 5 for condensing evaporated refrigerant removed from said preserving vessel 3 via vapor pipe 6, and a liquid return pipe 7 through which the liquid phase part of the condensing chamber 5 is made to communicate with that of said preserving vessel 3. Referring now to the embodiment illustrated in Fig. 10, Kameda et al. clearly

Art Unit: 3744

demonstrates that it is already known in the art to have said liquid return pipe 7 entirely disposed below the upper surface of the liquid phase part of said preserving vessel 3. It should also be noted that in said embodiment Kameda et al. further teach an additional pipe 26 through which the liquid phase part of the condensing chamber 5 is made to communicate with that of said preserving vessel 3, said pipe 26 also being entirely disposed below the upper surface of the liquid phase part of said preserving vessel 3. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the system disclosed by Kondo et al. such that said pipe 16 was entirely disposed below an upper surface of the liquid phase part of said preserving vessel 17 as taught by Kameda et al. because such a configuration would have reduced the amount of any re-vaporization of said condensed cryogen as it flows through said pipe 16 since said pipe 16 would always be maintained at cryogenic temperatures. In other words by disposing said pipe 16 entirely below the upper surface of the liquid phase part of said preserving vessel 17, as generally demonstrated by Kameda et al., said pipe 16 would always remain filled with liquid cryogen at cryogenic temperatures and accordingly the amount of any re-vaporization of the condensed cryogen as it flows in said pipe 16 would be reduced. Kondo et al. also fail to disclose that said liquid nitrogen in the preserving vessel is supplied from a liquid nitrogen cylinder and fail to disclose a valve associated with a liquid supply pipe from said cylinder to said preservation chamber of said preserving vessel, wherein the valve is opened to supply said liquid nitrogen to said preservation chamber when a liquid level of said liquid nitrogen in said preservation chamber, detected by a liquid level sensor in said

Art Unit: 3744

preservation chamber, becomes lower than a predetermined level. Brodbeck et al. teach a delivery system for liquid nitrogen comprising a vessel 1 with a chamber holding liquid nitrogen (column 3, lines 21-22), a liquid nitrogen cylinder with a supply pipe 7 connected to said vessel 1 (column 3, lines 34-36), a valve 13 associated with said supply pipe 7, and a liquid level sensor 15 arranged in said chamber of said vessel. Said valve 13 is opened to supply said liquid nitrogen to said chamber of said vessel 1 when the liquid level of said liquid nitrogen in said chamber is detected to be lower than a predetermined level by said liquid level sensor 15 (column 3, lines 45-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in the system disclosed by Kondo et al. said liquid nitrogen cylinder, valve, and liquid level sensor arrangement taught by Brodbeck et al. in order to fill said preserving vessel with cryogen and to automatically maintain the amount of cryogen in said system during use, for example, if too much cryogen has been vaporized in said preserving vessel and the liquid level in said vessel is too low to provide proper cooling. Kondo et al. further fail to disclose a pressure sensor arranged in said condensing chamber, and that said Stirling refrigerator is driven when a detection value of said pressure sensor is a predetermined value or higher, and further fails to disclose a gas discharge path and safety valve provided in communication with said condensing chamber that operates to relieve dangerous pressure buildup in said condensing chamber. Yanai et al. teach a condensing chamber 1 for liquefying and storing nitrogen, and located within said condensing chamber 1 is the cold part 2 and 6 of a low-temperature refrigerator 3 for use in condensing nitrogen vapor. With particular

Art Unit: 3744

reference now to column 3, lines 22-31, said chamber 1 is provided with a pressure sensor 16 that senses the pressure within said chamber 1. If the pressure drops below a predetermined pressure the operation of the cold part 2 of the refrigerator 3 is stopped. In other words, the refrigerator 3 is driven when a detection value of said pressure sensor 16 is a predetermined value or higher. It would have been obvious to one of ordinary skill in the art at the time the invention was made to regulate the Stirling refrigerator disclosed by Kondo et al. using the pressure-sensor arrangement taught by Yanai et al. in order to prevent unnecessary operation of the refrigerator, particularly when there is little vapor in the chamber, and therefore reduce the energy consumption of the system. Yanai et al. further teach a gas discharge path 18 and safety valve 19 in communication with said condensing chamber 1, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included this safety valve arrangement in said condensing chamber disclosed by Kondo et al. in order to prevent possible rupturing of said condensing chamber if the pressure within said chamber exceeds safe operating levels, as is already commonly practiced in the art.

Response to Arguments

5. Applicant's arguments with respect to amended claim 1 have been considered but are not persuasive in view of the new ground(s) of rejection. Applicant argues that neither Kondo et al., Brodbeck et al., nor Yanai et al. teach a pipe connecting between the lower parts of a condensing and preservation chamber in which the pipe is entirely disposed below an upper surface of a liquid phase part of a preserving vessel, as recited in the amended claim. However as discussed above Kameda et al. demonstrate

Art Unit: 3744

that such a configuration is already known in the art and would have been obvious to one of ordinary skill. Accordingly, Applicant's amendment to the claim is not considered sufficient in overcoming the prior art.

6. Applicant also alleges once again that there is no support for combining the teachings of Kondo et al., Brodbeck et al., and Yanai et al. The Examiner respectfully believes that this argument was fully addressed in the Office Action mailed 4 February 2005 (see enumerated section 5) and therefore does not consider any further discussion to be necessary.

7. Lastly, the Examiner respectfully points out that Applicant has not amended the Specification as prescribed in previous Office Action mailed 13 May 2005. Accordingly the objection to the disclosure is maintained.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard L. Leung whose telephone number is 571-272-4811. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl J. Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Richard L. Leung **CHERYL TYLER**
Examiner **SUPERVISORY PATENT EXAMINER**
Art Unit 3744

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